

Re Item V

Reasoned statement with regard to novelty, inventive step, and industrial applicability; documents and explanations supporting such statement

1. Reference is made to the following document:

D1: US-A-6045740

2. The following statements are understood to include Item VIII of this decision:

- 2.1 D1 (see column 4, lines 1–52 and Figure 2) discloses a method for injecting an injection molded part made of plastic, using an injection unit having a gate in a nozzle housing, the gate being connected to a flow channel which opens into a filling space in which an outer needle, and within same an inner needle for closing the gate, are guided, the outer needle first being pulled back, thereby forming the filling space, and the filling space is predosed with plastic from the flow channel, during which the inner needle holds the gate closed, and at the end or after predosing, the gate is opened by lifting the inner needle, and the predosed plastic material is pressed through the gate into a cavity by a lifting motion of the outer needle, and the inner needle closes the gate at the end of the lifting motion of the outer needle or at the end of a predetermined retention time.

The subject matter of Claim 1 differs from the teaching of document D1 in that plastic is drawn in from the flow channel to predose the filling space with plastic from the flow channel, and that the volume of plastic inside the filling space is essentially zero at the end of the injection process or of the application of the retention pressure.

Therefore, the subject matter of Claim 1 is novel, and Claim 1 meets the requirements of Article 33(2), PCT.

The object on which Claim 1 is based may be regarded as an acceleration of the filling process (see page 10, first paragraph).

Since the features of the approach of Claim 1 are not known from the existing prior art, and since one skilled in the art obtains no information herein on the use of said features for this approach, the subject matter of Claim 1 is not obvious to one skilled in the art, and Claim 1 likewise meets the requirements of Article 33(3), PCT.

- 2.2 D1 (see column 4, lines 1–52 and Figure 2) further discloses a device for injecting an injection molded part made of plastic, having a gate in a nozzle housing, the gate being connected to a flow channel, and an inner needle is provided in the gate in the nozzle housing, and an outer needle is provided for dosing, pressing, and optionally applying pressure to the melt, and the flow channel opens into a filling space in which the outer needle is also guided, the flow channel opening into the filling space, at the base thereof.

Therefore, the subject matter of Claim 9 is not novel, and Claim 9 does not meet the requirements of Article 33(2), PCT.

- 3.1 The combination of features of Claim 14 is likewise known from D1 (see column 4, lines 1–52). Claims 2 through 8 are dependent on Claim 1, and likewise meet the requirements of Article 33(2) and 33(3), PCT.
- 3.2 Because the technical features of Claim 9 are generally known, at the present time it cannot be determined whether a technical connection exists among the various claims which are directly dependent thereon, as defined by Rule 30, EPC. Consequently, at the present time it does not appear to be possible to acknowledge or select significant features in support of inventive step.

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Specific deficiencies in the International Application

1. Contrary to the requirements of Rule 5.1 a) ii), PCT, neither the relevant prior art

disclosed in Document D1 nor the document itself is mentioned in the Description.

2. Independent Claim 1 is not written in the two-part form specified by Rule 6.3 b), PCT. In the present case, however, division into two parts appears to be appropriate.

Re Item VII

Specific remarks on the International Application

1. The application does not meet the requirements of Article 6, PCT for the following reasons:
 - 1.1 A comparison of the method features of method claim 1 with the device features of device claim 9 reveals that identical or corresponding features are lacking, either in the method claim or the device claim, and therefore the claims do not conform to their scope of protection.
 - 1.2 In Claim 9, the phrase "dosing, pressing, and optionally applying pressure to the melt" refers to a method for using the device, and not to the definition of the device based on its technical features. Therefore, in conflict with the requirements of Article 6, PCT, the intended limitations do not proceed clearly from the claim.
 - 1.3 Claim 7 is a device claim which is dependent on a method claim. The same applies to Claim 12, which cannot be dependent on Claim 8.

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CLAIMS

1. Method for injecting an injection molded part made of plastic, using an injection unit having a gate (1) in a nozzle housing (2), the gate (1) being connected to a flow channel (5) which opens into a filling space (9) in which an outer needle (3), and within same an inner needle (4) for closing the gate (1), are guided, the outer needle (3) first being pulled back, thereby forming a filling space (9), and plastic is drawn in from the flow channel (5) and the filling space (9) is predosed with plastic from the flow channel (5), during which the inner needle (4) holds the gate (1) closed, and at the end or after predosing, the gate (1) is opened by lifting the inner needle (4), and the predosed plastic material is pressed through the gate (1) into a cavity by a lifting motion of the outer needle (3), the volume of plastic inside the filling space (9) being essentially zero at the end of the injection process or of the application of retention pressure, and the inner needle (4) closes the gate (19) [sic; (1)] at the end of the lifting motion of the outer needle (3) or at the end of a predetermined retention time.
2. Method according to Claim 1, characterized in that the base of the filling space (9) runs at an angle toward the gate (1), and the tip of the outer needle (3) has a corresponding design.
3. Method according to Claim 1 or 2, characterized in that the flow channel (5) opens into the filling space (9), near the base thereof.

4. Method according to one of Claims 1 through 3, characterized in that the lifting motion of the inner and/or outer needle (4, 3) is produced by mechanical, hydraulic, or electrical means.
5. Method according to at least one of Claims 1 through 5, characterized in that additional plastic material is introduced into the cavity, also to compensate for any shrinkage, by at least one further lifting motion of the outer needle (3).
6. Method according to at least one of Claims 1 through 5, characterized in that additional plastic material is introduced into the filling space (9) through at least one second, blockable flow channel (5b).
7. Device according to Claim 6, characterized in that the inner needle (4) is pulled back and a flow channel (5a) is opened, via which melt is introduced directly into the cavity through the gate (1), while the inner needle (4) continues to block the filling space (9).
8. Device according to Claim 7, characterized in that the inner needle (4) is pulled back further, and the passage from the filling space (9) to the cavity is opened.
9. Device for injecting an injection molded part made of plastic, having a gate (1) in a nozzle housing (2), the gate (1) being connected to a flow channel (5), and an inner needle (4) is provided in the gate (1) in the nozzle housing (2), and an outer needle (3) is provided for dosing, pressing, and optionally applying pressure to the melt, the flow channel (5) opening into a filling space (9) in which the outer needle (3) is also guided, characterized in that the flow channel (5, 5b) opens into the filling space (9), at the base thereof.

10. Device according to Claim 9, characterized in that the base of the filling space (9) runs at an angle toward the gate (1), and the tip of the outer needle (3) has a corresponding design.
11. Device according to Claim 9 or 10, characterized in that a blocking element (7a, 7b) is provided in the flow channel (5).
12. Device according to one of Claims 8 through 11, characterized in that at least one additional flow channel (5b) opens into the filling space (9) and is likewise provided with a blocking element (7b).
13. Device according to Claim 12, characterized in that the flow channel (5a) discharges a short distance below the gate (1), while the flow channel (5b) opens into the filling space (9), near the base thereof.
14. Device according to at least one of Claims 9 through 13, characterized in that the nozzle housing (2) forms an injection unit with the two needles (3, 4) and the flow channel(s) (5, 5a, 5b), and the injection unit may be associated with a cavity.